

10-3.0 UTILITY ACCOMMODATION POLICY

10-3.01 Introduction

10-3.01(01) Purpose

The policies and principles in this Section should be used to control the utility occupancy of public-highway right of way, including easements, under INDOT's jurisdiction. This includes local-public-agency work which uses Federal-aid funds administered by INDOT.

INDOT has the responsibility to maintain highway right of way under its jurisdiction as necessary to preserve the integrity, operational safety, and function of the highway facility. Because the manner in which utilities cross or otherwise occupy highway right of way can materially affect the appearance, safe operation, and maintenance of the highway, it is necessary that this use and occupancy be authorized and reasonably regulated.

This policy is provided to develop and preserve a safe roadside and to minimize possible interference and impairment to the highway, its structures, appearance, safe operation, construction, and maintenance.

10-3.01(02) Application

This policy applies to all public and private utilities including electric power, telephone, telegraph, cable television, water, gas, oil, petroleum products, steam, chemicals, sewage, drainage, irrigation, and similar lines that will be located, adjusted, or relocated within the right of way under the jurisdiction of INDOT. The utilities may involve underground, surface, or overhead facilities, either singularly or in combination.

10-3.01(03) Scope

This policy is provided by INDOT for use in regulating the location, design, and methods for installing, adjusting, accommodating, and maintaining utilities on highway right-of-way. It is limited to matters which are the responsibility of highway authorities for preserving the integrity of the highway and its safe operation.

Where laws or orders of public authority (such as the Indiana Utility Regulatory Commission, the Indiana State Board of Health, or the requirements of the Federal Natural Gas Pipeline Safety Act of 1968), industry or governmental codes prescribe a higher degree of protection or standards than those described herein, the higher degree will prevail.

10-3.01(04) Other Requirements

All utility installations and construction must comply with the requirements contained herein, the INDOT *Standard Specifications*, the *Manual on Uniform Traffic Control Devices*, and the clear-zone requirements described in Chapter Forty-nine.

10-3.01(05) Exceptions

Throughout this policy, there are several instances where the phrase “exceptions may be permitted in accordance with Section 10-3.01(05)” is used. These denote where INDOT tends to receive the most requests for exceptions to this policy. However, exceptions not only to these provisions, but any provision contained in this section may be authorized by the INDOT Chief Engineer, where it is demonstrated that extreme hardship or unusual conditions provide justification and where alternative measures can be prescribed to fulfill the intent of this policy. All requests for exceptions must include an evaluation of the direct and indirect design, environmental and economic effects, including impacts on agricultural lands, which would result if the installation is permitted and a comparison to the results if it is not permitted, plus any other pertinent information.

10-3.01(06) Prior Instructions

This policy supersedes and replaces all policies or portions of policies pertaining to the accommodation, location and methods of utility installations, adjustments and maintenance which are in conflict.

10-3.02 Definitions

The following definitions apply to utility accommodation.

1. Utility. This term applies to all publicly-, privately-, or cooperatively-owned lines and/or their accessories within the highway right of way except those used for highway-oriented needs. Such utilities may involve underground, surface, or overhead facilities either singularly or in combination. The term Utility, when capitalized, means the utility company, including any wholly-owned or -controlled subsidiary. Public utilities are generally considered those which convey a product, power, or communication from the Utility to a customer. Private lines are generally considered those which are devoted exclusively to private use.

2. Low-Volume Highway. Any non-limited-access highway which carries a traffic volume of not more than 750 vehicles per day, and, if known, upon which the projected traffic volume at the design year is not anticipated to exceed 1300 vehicles per day.
3. Utilities Team. The team in the Production Management Division responsible for identifying potential utility conflicts in a highway project and coordinating with those utility companies to make adjustments or relocations as needed.
4. Permits Team. The team in the Contract Administration Division responsible for issuing a permit to a Utility for the construction, rebuilding, or repair of utility lines and facilities on highway right of way.
5. Relocation Permit. The written permission provided to a Utility by the Utilities Team and/or district office which allows the Utility to relocate existing facilities to accommodate highway construction or maintenance.
6. Right-of-Way Permit. The written permission by INDOT which allows the use and occupancy of highway right of way for utility lines and/or facilities.
7. High- or Low-Pressure Gas Line. A high-pressure gas line is that which is generally operated at a pressure in excess of 60 psi. A low-pressure gas line is that which operates at 60 psi or lower.
8. Pavement Structure. The combination of the surface, intermediate, and base courses, subbase, and up to 8 in. of stabilized subgrade material which supports the traffic load and distributes it to the roadbed. A maximum of 8 in. of subgrade stabilization will be considered a part of the pavement structure.
9. Highway, Street, or Road. A general term denoting a public way for purposes of vehicular travel, including the entire area within the right of way.
10. Roadway. The portion of a highway, street, or road, including shoulders, intended for vehicular use. A divided highway has two or more roadways.

10-3.03 General

10-3.03(01) Permits

Each public utility company has a qualified right to occupy public right of way, subject to the control of INDOT or other agencies with jurisdiction of the right of way. This control is exercised by requiring a right-of-way permit for each point or area of use by a utility facility.

This will ensure compliance with the standards, policies, and methods promulgated by INDOT and will make possible the safe control of traffic movement, safety, and coordination of work with other utilities and highway maintenance or construction work.

A utility company's occupancy request may be initiated as follows.

1. Utility-Company-Initiated. A utility company initiates the request if it wants to install new facilities or adjust existing facilities within highway right of way. The utility company must obtain a permit through the appropriate district or subdistrict office. A fee is charged for the permit.
2. INDOT-Initiated. INDOT initiates the request if a utility must be relocated or adjusted to accommodate proposed highway construction, reconstruction, or maintenance. This work is coordinated by the Utilities Team or the appropriate district office.

All utility facilities within the existing or proposed right of way are identified while the project is in the design stage. All affected utility companies receive plans of the proposed highway construction and are notified if relocation is necessary. Each utility company must coordinate relocations with, and obtain a relocation permit from, the Utilities Team or the appropriate district office. No fee is charged for the permit.

If the utility company does not complete its adjustments or relocations in a timely manner, INDOT may claim damages from the utility company for delay of highway work. In the event of delay, INDOT may also perform the necessary work itself or through a contractor and bill the utility company for all costs associated with this work.

The utility company must identify and obtain any other necessary permits or authorizations for the installation, which may be required from the U.S. Army Corps of Engineers, the Indiana Department of Natural Resources, railroad companies, or others. INDOT may require the utility company to produce satisfactory evidence that these permits and authorizations have been obtained.

10-3.03(02) Driveway Conflict

Construction, reconstruction, modification, or relocation of a private drive on highway right of way may also require adjustment or relocation of utility facilities. Where the work on the drive is initiated by is or incidental to a highway project, the adjustment or relocation of the utility will be treated like any other highway-initiated work.

Where the work on the drive is initiated by a private owner, subject to INDOT approval, INDOT is not responsible for identifying or resolving any conflicts between the drive and utilities. If a

conflict exists and there is no other practical location for the drive, the utility must be adjusted or relocated. The division of costs, if any, for this work will be resolved between the utility company and the owner of the drive.

10-3.03(03) Private Line

Because a private line serves only its owner, it is not in the public interest for it to be located within highway right of way. A longitudinal installation of a private line is not permitted. Exceptions may be made in accordance with Section 10-3.01(05) where public interest can be demonstrated. A crossing of highway right-of-way by a private line may be permitted subject to INDOT control. A private-line installation must be in accordance with all other applicable requirements included herein.

10-3.03(04) Service Line

A service line is a special class of private line. Whether the public-utility facility is on or off highway right-of-way, the sole reason for a service line to be on highway right-of-way is to facilitate its connection with a public utility. Because it is in the interest of both the customer and utility company to have these connections, a service line is permitted on highway right-of-way whenever practical.

There is a wide variation among utility companies on the division of ownership, costs, and responsibility between them and their customers for the portion of the service line on highway right-of-way. INDOT neither seeks nor desires to regulate this relationship. However, the utility company clearly benefits from the service line. As a practical consequence of effectively regulating utility occupancy of highway right-of-way, the utility company must at a minimum co-sign any service line permit. Each utility company must determine the proper division of costs, if any, with each customer.

10-3.03(05) Access Control

INDOT has the authority to control and regulate access to each highway under its jurisdiction. A large public investment has been made to construct and maintain a safe and efficient highway system. A major objective is to limit interference with vehicles or pedestrians which are entering, exiting, or crossing the highway. Access control includes the categories as follows.

1. Non-Limited Access. INDOT has the authority to regulate the location and details of access which affect the safe operation of the highway. However, it has not purchased

access control rights from adjoining properties. This level is typical of a highway with frequent drives or intersections.

2. Partial Limited Access. INDOT has declared or purchased access control from adjoining properties. Access is controlled to give preference to through traffic, but there may still be some intersecting streets at grade and some driveway connections. This level is typical of a divided highway with some intersections or drives.
3. Full Limited Access. INDOT has purchased access control rights from adjoining properties. Access is controlled to give priority to through traffic by providing access only from selected public roads, by prohibiting crossings at grade, and by prohibiting driveway connections. This level is typical of an Interstate highway or a divided highway.

The type of access control is not always apparent from visual inspection. The appropriate district office should be contacted to confirm the type of control in effect for a specific location. This determines the type and extent of utility installations which may be permitted. The access-control line is the limit at which access is physically controlled for limited-access right of way. The access-control line is normally but not always in the same location as the right-of-way line.

10-3.03(06) Location

The following applies to the location of utility lines.

1. Utility lines must be located to avoid or minimize the need for adjustment for future highway improvements and to permit access to the utility lines for their maintenance with minimum interference to highway traffic. Full consideration must be given to the measures necessary to preserve and protect the maintenance, operation, safety, and aesthetic characteristics of the highway.
2. Utility installations on an urban street with closely abutting improvements must be resolved consistent with the prevailing limitations and conditions.
3. Utilities should cross a roadway at right angles or as nearly as practical to right angles. Reasonable latitude may be exercised for existing utilities which are otherwise qualified to remain in place.
4. Underground utility crossings which are encased should be constructed to allow for replacement of the lines within the existing encasement if the existing line ruptures.

5. For utility crossings on a limited-access highway, all supporting structures and above-ground appurtenances should be located outside the access-control line and, preferably, outside the right-of-way line. Installation and maintenance must be from non-limited access frontage roads, crossroads, or streets where practical or otherwise from outside the access-control line and, preferably, outside the right-of-way line of the through-traffic roadway. Exceptions may be allowed in accordance with Section 10-3.01(05) for an unusually wide right of way or median.
6. Longitudinal installations must be located on uniform alignment as near as practical to the right-of-way line to provide space for future highway construction and for possible future utility installations. Where irregularly shaped portions of the right of way extend beyond the normal right-of-way limits, variances in the location from the right-of-way line may be allowed as necessary to maintain a reasonably uniform alignment for longitudinal utility installations. Above-ground longitudinal installations are not permitted in a highway median.
7. Longitudinal installations on a highway with partial access control are generally discouraged. Installations may be allowed in accordance with Section 10-3.01(05) and the following conditions.
 - a. Individual service connections will be permitted only if no other reasonable alternative exists. Factors to be considered include distance between distribution points, terrain, cost, and prior existence.
 - b. Utility maintenance points, such as manholes, must be installed outside of the right of way wherever practical.
8. Longitudinal installations on a highway with full access control are not permitted. Exceptions may be allowed in accordance with Section 10-3.01(05) and the following conditions:
 - a. individual service connections may not be permitted;
 - b. the utility must not be installed or serviced by direct access from the limited-access roadway or connecting ramps; and
 - c. the utility must not interfere with or impair the safety, design, construction, operation, maintenance, stability, or future expansion of the highway.
9. Wireless telecommunication towers may be permitted in highway right-of-way with partial- or full-access control in accordance with Section 10-3.06.

10-3.03(07) Design

The following applies to the design of a utility installation.

1. The utility company is responsible for the design of the utility facility to be installed within the highway right-of-way or attached to a highway structure. Full consideration must be provided to the measures necessary to preserve and protect the maintenance, operation, safety, and aesthetic characteristics of the highway.
2. Utility installations on, over, or under the highway right of way must, at a minimum, be in accordance with the following:
 - a. electric power and communication facilities must be in accordance with the National Electric Safety Code;
 - b. water lines must be in accordance with the applicable specifications of the American Water Works Association;
 - c. pressure pipelines must be in accordance with the applicable sections of the American National Standards Institute (ANSI) Code for Pressure Piping; 49 CFR Parts 192, 193 and 195; and any applicable industry codes;
 - d. liquid petroleum pipelines must be in accordance with the applicable recommended practice of the American Petroleum Institute for pipeline crossings under a railroad or highway; and
 - e. any pipeline carrying hazardous materials must be in accordance with the rules and regulations of the U. S. Department of Transportation governing the transportation of such materials.
3. Each utility installation on, over, or under highway right of way, or attachment to a highway structure should be of durable materials designed for a long service life expectancy, and be relatively free from routine servicing and maintenance.
4. On a new installation or adjustment of an existing utility line, provisions should be made for known or planned expansion of the utility facilities, particularly those located underground or attached to a bridge. They should be planned to minimize hazards and interference with highway traffic if additional overhead or underground lines are installed at some future date.

5. Utility lines which are attached to a highway bridge or separation structure must have shut-off valves, automatic where practical, installed at or near the ends of the structure, unless segments of the lines can be isolated by other devices within a reasonable distance.

10-3.04 Structure

10-3.04(01) Utility Structure

Where it would be more economical to carry one or several utility lines across a highway in a tunnel or on a bridge rather than in separately trenched and encased crossings, consideration should be given to using a separate structure specifically for the utility crossing. Such a structure may serve a joint purpose as a utility and pedestrian facility and/or sign support structure.

Each utility company must agree that any maintenance, servicing, or repair of its utility lines will be its responsibility. Further, the cost of designing, constructing, and maintaining the utility tunnel or bridge must be divided among the utility companies in an agreed, equitable manner. INDOT will participate in these costs only to the extent that the utility company would otherwise normally be reimbursable for such work or to the extent that the structure is also used for highway purposes.

10-3.04(02) Highway Structure

The following applies to the attachment of utility lines to a highway structure.

1. The attachment of utility lines to a highway bridge or separation structure is discouraged. Such attachments can materially affect the durability and load capacity of the structure, the safe operation of traffic, the ease of maintenance, and the overall appearance.
2. Exceptions are permitted in accordance with Section 10-3.01(05) and the following criteria. Each attachment will be considered individually and must not be considered a precedent for granting of any subsequent requests for attachment.
 - a. **Communication Line.** Where it is impractical to carry a communication line across a stream or other obstruction, INDOT may permit attachment of the line to its bridge. On an existing bridge, the line must generally be carried in conduit and located so as not to interfere with stream flow, traffic, or routine maintenance operations. If a request is made prior to construction of a bridge, suitable conduit will be provided in the structure if the utility company bears the cost of all additional work and materials involved and all other applicable requirements have been met.

- b. Gas or Petroleum Line. A line carrying these or other hazardous, explosive, or highly pressurized or heated materials must not be attached to a structure except in extreme hardship. It cannot be installed where it can be impacted by traffic on or under the bridge, nor where a leak could flood a roadway on or under the bridge.
- c. Power Line. A high-voltage power line must not be attached to a structure except in extreme hardship. A low-voltage line may be attached where the cost of other solutions is prohibitive. A power line will not be installed where it can be impacted by traffic on or under the bridge.
- d. Water or Sewer Line. This line must not be installed where it can be impacted by traffic on or under the bridge, nor where a leak could flood a roadway on or under the bridge.
- e. Structural Analysis. Each request to attach a pipeline to an existing bridge must be accompanied by sufficient information to determine the effect of the added load on the structure. If the bridge does not have sufficient strength to carry the load with an adequate margin of safety, the request will be denied. Where the request is to attach a line within or to a new structure, the utility company will be responsible for any increase in the cost of the structure to support the extra load of the pipeline, including any increase in the size or thickness of members necessary to contain lines or conduits installed within the structure.
- f. Attachment Details. All requests for attachments must be accompanied by sufficient details of the manner and type of attachment to allow for adequate review and approval by INDOT.
- g. Asbestos Materials. Materials contain asbestos should not be used on a utility line attached to a highway structure. Where a utility is located on a highway structure, the utility company shall submit to INDOT on its letterhead, a signed, dated copy of the statement as follows:

We hereby certify that no asbestos-containing material was specified as a building material in any construction document for this project.

In addition, the Contractor's contract should include the statement as follows:

Before final payment of the contract price, the Engineer will sign and submit to INDOT, on the Contractor's letterhead, a dated copy of the following statement:

I hereby certify that to the best of my knowledge that no asbestos-containing material was used as a building material during this project.

3. If an attachment to a structure must be relocated to accommodate highway work or safety, the utility company must apply for a new attachment. Prior existence will not be a basis for reattachment.

10-3.05 Pipeline

10-3.05(01) General

1. Methods of Protection.

- a. General. Each pipeline must provide sufficient strength to withstand internal design pressures and must be of satisfactory durability under the conditions to which it may be subjected and must meet any other applicable codes or industry standards for the type of pipeline and material being transmitted.
- b. Encased. Encasement must consist of a pipe or other separate structure around and outside the carrier line and should be designed to support the superimposed loads of roadway, traffic, and construction equipment. Casing strength must meet or exceed the structural requirements for a drainage culvert. Casing materials must be of satisfactory durability under the conditions to which they may be subjected. A highway crossing must be encased in the interest of safety, protection of the highway and utility, and access to the utility.

Where casing is used, it must be provided under a median, from top of backslope to top of backslope for a cut section, 5 ft beyond the toe of slope under a fill section, 5 ft beyond face of curb in an urban section, or 5 ft beyond any structure which the line passes under or through. Encasement may be omitted under a median which is substantially wider than standard for such a roadway.

- c. Non-Encased. A non-encased pipeline must provide sufficient strength to withstand internal design pressures and the superimposed loads of the roadway and traffic, including that of construction equipment. A non-encased pipeline

crossing a highway must comply with the requirements herein for each type of utility.

2. Manhole, Vault, or Pit. This type of access must be limited to that necessary for installation and maintenance of an underground line. Each must be directly in line with the utility facility, must be of the minimum width and length to accomplish its intended function, and must comply with any other necessary codes or requirements. It must not be placed or permitted to remain in place in the pavement or shoulders of a high-volume roadway. Exceptions in accordance with Section 10-3.01(05) may be permitted for extreme hardship for a roadway in an urban area. It may also be placed or permitted to remain in place under traffic lanes of a low-volume roadway in an urban area provided steps are taken to minimize such installation and to avoid its location at an intersection. It must be installed flush with the roadway or ground surface and must be of sufficient strength to withstand the superimposed loads of the roadway, traffic, and construction equipment.
3. Depth. As used herein, depth of cover must be to the top of the pipe if non-encased or otherwise to the top of the casing. The depth of an underground line must be as specified herein for each type of utility. Where placement at such depth is impractical or where unusual conditions exist, exceptions to permit other types of protection may be approved as appropriate.
4. Methods of Installation. An underground line to be installed across an existing roadway must be installed by boring, tunneling, or jacking in accordance with INDOT specifications. Where installed by jacking or boring, encasement may be required. A bore pit should be located at least 30 ft from the edge of the nearest through traffic lane and not less than 20 ft from the edge of pavement on ramps. On a low-traffic roadway or a frontage road, a bore pit should not be less than 10 ft from the edge of pavement or 5 ft from face of curb. Adequate warning devices, barricades, or protective devices must be used to prevent traffic hazards. Where circumstances necessitate the excavation of a bore pit closer to the edge of pavement than established above, concrete barrier rail or another approved device must be installed for protection of traffic in accordance with INDOT criteria (see Chapter Eighty-two). A bore pit must be located and constructed so as to not interfere with highway structural footings. Shoring must be used if necessary.
5. Location. An unsuitable or undesirable location must be avoided. This includes the following:
 - a. deep cut;
 - b. near footing of bridge or other highway structure;

- c. across at-grade intersection or ramp terminal;
 - d. at cross-drain where flow of water, drift, or stream bedload may be obstructed;
 - e. within basin or an underpass drained by a pump if the pipeline carries a liquid or liquefied gas; or
 - f. in wet or rocky terrain where minimum depth of cover would be difficult to attain.
6. Clearance. Vertical and horizontal clearance between a pipeline and a structure or other highway or utility facility should be sufficient to permit maintenance of the pipeline and the other facility.
7. Materials. Each pipeline or casing must provide sufficient strength to withstand the internal design pressure and the dead and live loads of the backfill, pavement structure, and traffic, including construction equipment.

10-3.05(02) High-Pressure Gas or Liquid Petroleum Line

1. Depth of Cover. Each line that is not under the roadway and not within 5 ft of it must have a minimum depth of cover of 2.5 ft if encased, or 3 ft if not encased.

Each line that is under the roadway or within 5 ft of it must have a minimum depth of cover under the pavement surface of 2.5 ft if encased, or 4 ft if not encased. Further, each line must be a minimum of 18 in. or one-half the diameter of the pipe or casing beneath the pavement structure, whichever is greater.

Each line must have a minimum depth of cover of 4 ft under a ditch.

An exception may be authorized for an existing line to remain in place with a reduction of 0.15 m in the depth of cover specified above. A further reduction may be permitted if the pipeline is protected by a reinforced-concrete slab which meets the following requirements.

- a. Width. Three times the pipe diameter but not less than 4 ft.
 - b. Thickness. Minimum of 6 in.
 - c. Reinforcing. Minimum of #4 bars on 12 in. centers, or equivalent.
 - d. Cover. Minimum of 6 in. between the slab and top of pipe.
2. Crossing Line. This may be encased or non-encased. However, only a welded-steel line with adequate corrosion protection may be used for a non-encased highway crossing.

3. Vents. One or more vents must be provided for each casing or series of casings. For a casing longer than 150 ft, vents should be provided at both ends. For a shorter casing, a vent should be located at the high end with a marker placed at the low end. Vents must be placed at the right-of-way line immediately above the pipeline and situated so as to not interfere with highway maintenance and to not be concealed by vegetation. Ownership of the line must be shown on the vents.
4. Marker. The utility company must place a readily-identifiable and suitable marker immediately above any high-pressure gas or liquid petroleum line where it crosses the right-of-way line, except where marked by a vent.

10-3.05(03) Low-Pressure Gas Line

1. Depth of Cover. Each line that is not under the roadway and not within 5 ft of it must have a minimum depth of cover of 2.5 ft if encased, or 3 ft if not encased.

Each line that is under the roadway or within 5 ft of it must have a minimum depth of cover under the pavement surface of 2.5 ft if encased, or 4 ft if not encased. Further, each line must be a minimum of 18 in or one-half the diameter of the pipe or casing beneath the pavement structure, whichever is greater.

Each line must have a minimum depth of cover of 4 ft under a ditch.

An exception may be authorized for an existing line to remain in place with a reduction of 6 in. in depth of cover specified above.

2. Crossing Line. This may be encased or non-encased. A non-encased crossing must be of welded-steel construction with adequate corrosion protection or a plastic line with no joints under or within 5 ft of the roadway.
3. Vents. One or more vents must be provided for each casing or series of casings. For a casing longer than 45 m, vents should be provided at both ends. For a shorter casing, a vent should be located at the high end with a marker placed at the low end. Vents must be placed at the right-of-way line immediately above the pipeline and situated so as to not interfere with highway maintenance and to not be concealed by vegetation. Ownership of the line must be shown on the vents.
4. Marker. The utility company must place a readily identifiable and suitable marker immediately above any low-pressure gas line where it crosses the right-of-way line, except where marked by a vent.

5. Plastic Line. The maximum size must not exceed industry standards, which is 6 in. to 8 in. Where plastic pipe is installed without a metallic casing, a metal wire must be installed concurrently or other means must be provided for detection purposes.
6. Location Exception. In an urban area, an existing longitudinal line which can be maintained without violating access control and which is not under the pavement or shoulder of any existing roadway or potential future improvement may remain in place provided that all other requirements are met, and provided that measures are taken to minimize any future need for cutting the pavement to make service connections on a high-traffic roadway.

10-3.05(04) Water Line

1. Depth of Cover. Each line that is not under the roadway and not within 5 ft of it must have a minimum depth of cover of 2.5 ft.

Each line that is under the roadway or within 5 ft of it must have a minimum depth of cover under the pavement surface of 4 ft. Further, each line must be a minimum of 18 in. or one-half the diameter of the pipe or casing beneath the pavement structure, whichever is greater.

Each line must have a minimum depth of cover of 3 ft under a ditch.

An exception may be authorized for an existing line to remain in place with a reduction of 6 in. in depth of cover specified above.

2. Crossing Line. Each crossing line must be encased, except for a service line of 2 in. diameter or less. Encasement under an entrance may be omitted in consideration of the type and amount of traffic and the depth, condition, and maintenance responsibility.
3. Plastic Line. Where plastic pipe is installed without a metal casing, a metal wire must be installed concurrently or other means should be provided for detection purposes.
4. Location Exception. In an urban area, an existing longitudinal line which can be maintained without violating access control and which is not under the pavement or shoulder of any existing roadway or potential future improvement may remain in place provided that all other requirements are met, and provided that measures are taken to minimize any future need for cutting the pavement to make service connections on a high-traffic roadway.

5. Appurtenances. Meter pits, sprinkler pits, regulator pits, or other such features must not be located within highway right of way. An exception may be allowed for an existing facility if it does not interfere with proposed highway construction, maintenance, operation, or safety.
6. Drain. One or more drains must be provided for each casing or series of casings. The drain should outlet outside of the roadway area to a natural drainage feature or roadway ditch.
7. Marker. The utility company must place a readily identifiable and suitable marker immediately above any water line where it crosses the right-of-way line.

10-3.05(05) Sanitary Sewer Line

1. Depth of Cover. Each line that is not under the roadway and not within 5 ft of it must have a minimum depth of cover of 2.5 ft.

Each line that is under the roadway or within 5 ft of it must have a minimum depth of cover under the pavement surface of 4 ft. Further, each line must be a minimum of 30 in. or one-half the diameter of the pipe or casing beneath the pavement structure, whichever is greater.

Each line must have a minimum depth of cover of 3 ft under a ditch.

An exception may be authorized for an existing line to remain in place with a reduction of 6 in. in depth of cover specified above.

2. Crossing Line. A line to be operated under pressure or which does not conform to the material, strength, or cover depths described herein must be encased. Encasement under an entrance may be omitted in consideration of the type and amount of traffic, depth, condition and maintenance, responsibility.
3. Material. New or relocated sewer lines may be of any material which has been proven to be of satisfactory strength and durability in local use, provided all other requirements are met.
4. Non-Metallic Line. Where a non-metallic line is installed without a metallic casing, a durable metal wire must be installed concurrently or other means should be provided for detection purposes.

5. Location Exception. Except where relocation is necessary to clear an existing line from a structure or other highway appurtenance or for other specific reasons, INDOT may permit an existing line to remain in place at any location except longitudinally under through-traffic lanes or ramps of a limited-access highway, provided the line is of satisfactory quality and depth, manholes are adjusted as needed, and provisions are made to ensure that any future service lines will not violate access-control limits or disturb the roadway.

10-3.06 Overhead Power or Communication Line

10-3.06(01) General

1. Type of Construction. A longitudinal line should be limited to single-pole construction. A transverse line should be limited to single-pole construction where practicable, but may also be approved to use the same type of support as used on the portion of the line immediately adjacent to the highway right of way provided all other requirements herein are met.
2. Vertical Clearance. Except as noted in Item 3.c. below, the minimum vertical clearance for an overhead communication or power line above the highway shall be not less than 18 ft, and should be greater if required by the National Electric Safety Code or other law or regulation.
3. Location.
 - a. In a rural area or at an uncurbed section in an urban area, poles supporting a longitudinal line should be located on a uniform alignment as far from the roadway as possible. Guy wires placed within the right of way should be held to a minimum and should normally be in line with the pole line. Other locations may be permitted for guy poles or wires, but they should not be located within the specified clear zone. At a curbed section in an urban area, poles shall be located as far as practical behind the outer curbs and preferably adjacent to the right-of-way line, but should provide at least 1.5 ft clearance behind the face of an existing curb or 2 ft behind the face of a proposed curb.
 - b. At a crossing, poles will not be permitted in the median or more than 3 ft inside the right-of-way line where practical. An exception may be allowed where the cost of spanning an extreme width is excessive and where poles can be located in accordance with these requirements.

- c. The horizontal or vertical location of an overhead power and communication line relative to a highway bridge or other structure should provide adequate clearance for construction and maintenance activities, where practical.
- 4. Clear Roadside. Each new utility-pole installation or other above-ground obstruction should be located outside of the appropriate clear zone (see Chapter Forty-nine). If the clear-zone width extends to the right-of-way line, an installation will not be permitted unless approved in accordance with Section 10-3.01(05). An existing installation must be relocated to outside of the clear zone (see Chapter Forty-nine) or obstruction-free zone (see Chapter Fifty-five), whichever is applicable, where they are found within the project limits.

Guy wires to ground anchors or stub poles should not be placed between a pole and the traveled way where they encroach upon the clear zone.

10-3.06(02) Telecommunication Tower

- 1. Applicability. These requirements apply specifically to a telecommunication tower placed within highway right-of-way as part of a resource-sharing project. Such tower will typically occupy space within Interstate-route limited-access right of way. A telecommunication tower that is not a part of a resource-sharing project will not be permitted to occupy Interstate-route limited-access right of way. A resource-sharing project is defined as a project undertaken by the State and a telecommunications provider to achieve a common goal of meeting each other's communication needs.
- 2. Location. Each location site must be in accordance with the following:
 - a. adequate sight distance for safe ingress to and egress from the tower site;
 - b. the tower should be located outside the clear zone and where it is unlikely to be struck unless shielding already exists. The desirable distance is 80 ft; and
 - c. there is an adequate pull-off area beyond the shoulder for construction and maintenance of the tower.

Listed below, in descending order of preference, are the site locations that INDOT will consider.

- a. Priority 1. Vehicle access to the tower site can be obtained from outside the limited-access control roadway. This would include access from a frontage or local road. This also would include access from a ramp to a rest area, weigh

station, etc. Where fencing exists, gates should be placed at appropriate locations to provide controlled access to the tower. Gates should be sized to accommodate the type of traffic-maintenance equipment that will access the tower. All gates shall be secured with locks, with keys being distributed to appropriate personnel. A locked-gate access requires an FHWA approval. See Figure 10-3A, Priority 1 Access.

- b. Priority 2. Within an interchange, vehicle access can be obtained from the right-hand side of a diagonal ramp. See Figure 10-3B, Priority 2 Access.
- c. Priority 3. Within an interchange, vehicle access can be obtained from the left-hand side of a diagonal ramp. See Figure 10-3C, Priority 3 Access.

An installation within Interstate-route limited-access right of way that is not in accordance with the criteria described above may be approved only through joint INDOT/FHWA concurrence.

- 3. Multiple Providers. Multiple telecommunication providers will be permitted on a tower. However, only one provider will maintain the tower structure and all attachments. The provider who will maintain the tower will be chosen through standard INDOT selection procedures.

10-3.07 Underground Power Line

- 1. Depth of Cover. Each line that is not under the roadway and not within 5 ft of it must have a minimum depth of cover of 2.5 ft if encased, or 3 ft if not encased.

Each line that is under the roadway or within 5 ft of it must have a minimum depth of cover under the pavement surface of 2.5 ft if encased, or 4 ft if not encased. Further, each line must be a minimum of 18 in. or one-half the diameter of the pipe or casing beneath the pavement structure, whichever is greater.

Each line must have a minimum depth of cover of 4 ft under a ditch.

An exception may be authorized for an existing line to remain in place with a reduction of 0.15 m in the depth of cover specified above. A further reduction may be permitted if the pipeline is protected by a reinforced-concrete slab which meets the following requirements.

- a. Width. Three times the pipe diameter but not less than 4 ft.
- b. Thickness. Minimum of 6 in.

- c. Reinforcing. Minimum of #4 bars on 12 in. centers, or equivalent.
 - d. Cover. Minimum of 6 in. between the slab and top of pipe.
2. Crossing Line. An underground power line operating at 600 V or less may be encased or non-encased provided the installation complies with the depths of cover specified herein. A line operating at above 600 V must be encased. Consideration should be given to encasement or other suitable protection for a power line near a bridge footing or other highway structure, or near other locations where there may be hazards.

Encasement, where used, may be metallic or nonmetallic. Such encasement must be designed to support the load of the highway and superimposed loads thereon, including that of construction equipment. The strength of the encasement must equal or exceed structural requirements for a drainage culvert. It must be composed of materials of satisfactory durability under conditions to which it may be subjected. Where used, encasement must be provided under a median, from top of backslope to top of backslope for a cut section, 5 ft beyond toe of slope and under a fill section, 5 ft beyond face of curb in an urban section including all side streets, and 5 ft beyond any structure which the line passes under or through. Encasement may be omitted under a median which is substantially wider than standard for such a roadway.

3. Marker. The utility company must place a readily identifiable and suitable marker immediately above any underground power line where it crosses the right-of-way line.
4. Location and Installation. A longitudinal line may be placed by plowing or open-trench method. It must be located on uniform alignment as near as practical to the right-of-way line to provide space for possible future highway construction or utility installations. Distance from the right-of-way line will depend upon the terrain involved and obstructions such as trees or other existing underground or aerial utility lines. On a highway with a frontage road, such installation will be located between the frontage road and the right-of-way line. An underground power line must not be placed longitudinally beneath the median or beneath a through-traffic roadway including shoulders. An underground power line placed longitudinally along a connecting roadway must not be placed under the median or beneath a through-traffic roadway, including shoulders, where that roadway connects with a State highway.

An underground line to be installed across an existing roadway must be installed by means of boring, tunneling, or jacking in accordance with INDOT specifications. If installed by means of jacking or boring, encasement may be required. A bore pit should be located at least 30ft from the edge of the nearest through traffic lane and not less than 20 ft from the edge of pavement on a ramp. On a low-traffic roadway or frontage road, a bore pit should not be less than 10 ft from the edge of pavement or 5 ft from face of curb. Adequate warning devices, barricades, or protective devices must be used to prevent

traffic hazards. Where circumstances necessitate the excavation of a bore pit closer to the edge of pavement than established above, concrete barrier rail or another approved device must be installed for protection of traffic in accordance with Chapter Eighty-two. A bore pit must be located and constructed so as to not interfere with the highway's structural footings. Shoring must be used if necessary.

5. Appurtenances. Above-ground pedestals or other appurtenances must be located at or near the right-of-way line, well outside the highway maintenance operation area.
6. Manhole, Vault, or Pit. This type of access point must be limited to that necessary to install and service the line. It must be directly in line with the utility facility and of the minimum width to accomplish its intended function and comply with any other necessary codes or requirements. It must be installed flush with the roadway or ground surface and must be of sufficient strength to withstand the superimposed loads of the roadway and traffic, including that of construction equipment. It should not be placed or permitted to remain in the pavement or shoulders of a high-volume roadway. An exception in accordance with Section 10-3.01(05) may be permitted on a roadway in an urban area of extreme hardship. A manhole may be placed or permitted to remain in place under traffic lanes of a low-volume roadway in an urban area provided measures are taken to minimize such installations and to avoid such locations at an intersection.

10-3.08 Underground Communication Line

1. Depth of Cover. Each line that is not under the roadway and not within 5 ft of it must have a minimum depth of cover of 2.5 ft.

Each line that is under the roadway or within 5 ft of it must have a minimum depth of cover under the pavement surface of 2.5 ft if encased, or 4 ft if not encased. Further, each line must be a minimum of 18 in. or one-half the diameter of the pipe or casing beneath the pavement structure, whichever is greater.

Each line must have a minimum depth of cover of 3 ft under a ditch.

An exception may be authorized for an existing line to remain in place with a reduction of 6 in. in depth of cover specified above.

2. Crossing. A line crossing a highway does not require encasement except where in the judgment of INDOT it is necessary for the protection of the highway or utility facility. Where encasement is not used, the utility company must specifically agree that the pavement will not be cut for repairs at any time in the future. Consideration should be given to encasement or other suitable protection for any communication facilities near

bridge footings or other highway structures or near other locations where there may be hazards.

Encasement, where used, may be metallic or nonmetallic. Such encasement must be designed to support the load of the highway and superimposed loads thereon, including that of construction equipment. The strength of the encasement must equal or exceed structural requirements for a drainage culvert. It must be composed of materials of satisfactory durability under conditions to which it may be subjected. Where used, encasement must be provided under a median, from top of backslope to top of backslope for a cut section, 5 ft beyond toe or slope and under a fill section, 5 ft beyond face of curb in an urban section and all side streets, and 5 ft beyond any structure which the line passes under or through. Encasement may be omitted under a median which is substantially wider than standard for such a roadway.

3. Marker. The utility company must place a readily identifiable and suitable marker immediately above any underground communication line where it crosses the right-of-way line.
4. Non-Metallic Line. Where a non-metallic line is installed without a metallic casing, a durable metal wire must be installed concurrently or other means must be provided for detection purposes.
5. Location and Installation. A longitudinal line may be placed by plowing or open-trench method. It must be located on uniform alignment as near as practical to the right-of-way line to provide space for possible future highway construction or utility installations. Distance from the right-of-way line will depend upon the terrain involved and obstructions such as trees or other existing underground or aerial utility lines. On a highway with a frontage road, such installation will be located between the frontage road and the right-of-way line. An underground power line must not be placed beneath the median or beneath a through-traffic roadway or connecting roadway, including shoulders.

An underground line to be installed across an existing roadway must be installed by means of boring, tunneling, or jacking in accordance with INDOT specifications. If installed by means of jacking or boring, encasement may be required. A bore pit should be located at least 30 ft from the edge of the nearest through traffic lane and not less than 20 ft from the edge of pavement on a ramp. On a low-traffic roadway or frontage road, a bore pit should not be less than 10 ft from the edge of pavement or 5 ft from face of curb. Adequate warning devices, barricades, or protective devices must be used to prevent traffic hazards. Where circumstances necessitate the excavation of a bore pit closer to the edge of pavement than established above, concrete barrier rail or another approved device must be installed for protection of traffic in accordance with Chapter Eighty-two. A bore pit must be located and constructed so as to not interfere with the highway's structural

footings. Shoring must be used if necessary.

6. Appurtenances. Above-ground pedestals or other appurtenances must be located at or near the right-of-way line, well outside the highway maintenance operation area.
7. Manhole, Vault, or Pit. This type of access point must be limited to that necessary to install and service the line. It must be directly in line with the utility facility and of the minimum width to accomplish its intended function and comply with any other necessary codes or requirements. It must be installed flush with the roadway or ground surface and must be of sufficient strength to withstand the superimposed loads of the roadway and traffic, including that of construction equipment. It should not be placed or permitted to remain in the pavement or shoulders of a high-volume roadway. An exception in accordance with Section 10-3.01(05) may be permitted on a roadway in an urban area of extreme hardship. A manhole may be placed or permitted to remain in place under traffic lanes of a low-volume roadway in an urban area provided measures are taken to minimize such installations and to avoid such locations at an intersection.

10-3.09 Irrigation or Drainage Pipe, Ditch, or Canal

1. An irrigation or drainage facility installed across highway right of way must be designed and constructed in accordance with INDOT standards for a culvert or a bridge.
2. A longitudinal ditch or canal which would closely parallel the highway must not be permitted nor will any appurtenances be permitted within the clear zone which would constitute a hazard to traffic. See Chapter Forty-nine.

10-3.10 Miscellaneous

10-3.10(01) General

Various types of utility lines not specifically described herein must be considered based on the nature of the line. Each line carrying caustic, flammable or explosive, heated, or otherwise hazardous materials must be considered in the requirements for high-pressure gas or liquid-petroleum line.

1. Preservation, Restoration, and Cleanup.
 - a. Disturbed Area. The area disturbed by a utility installation or relocation should be minimized. Restoration methods must be in accordance with INDOT

specifications or special provisions included in the utility use and occupancy agreements.

- b. **Spraying, Cutting, or Trimming of Tree.** The utility company should be prohibited from such activities unless written permission is provided by INDOT. Where permission is granted, only light trimming should be permitted. If the removal of a tree is permitted, the stump must either be cut to the ground or be removed and the hole properly backfilled as specified by INDOT. All debris, refuse, and waste must be removed from the site. It is common that a tree must be removed where a utility company is doing relocation work to accommodate an INDOT project. If the utility company wishes to do the removal, it must contact INDOT regarding trees that must not be disturbed.
- c. **Drainage.** An existing drainage facility should not be disturbed. An underground utility facility must be backfilled with pervious material and outlets must be provided for entrapped water. Underdrains must be provided where necessary. Jetting or puddling will not be permitted under the roadway.

2. Safety and Convenience.

- a. **Control of Traffic.** Traffic controls for utility construction and maintenance operations must be in accordance with the *Manual on Uniform Traffic Control Devices*. All construction and maintenance operations must be planned with full regard to safety and to minimize traffic interference. On a heavily-traveled highway, construction operations interfering with traffic should not be permitted during periods of peak traffic flow. Such work must be planned so that closure of intersecting streets, road approaches, or other access points is minimized.
- b. **Servicing, Maintenance, or Repairs.** Each utility facility must be maintained in good repair both structurally and aesthetically. The utility use and occupancy agreement will identify the maintenance operations which are permitted and will indicate situations where prior notification to INDOT is required.

3. Records. The utility company must maintain records that describe the utility usage, size, configuration, material, location, height or depth, and any special features such as encasement, manholes, and valves. Such records must include all service lines which enter or cross the highway right-of-way. The information must be in a reproducible form which is available to other utility companies or highway agencies.

4. Construction Identification of Utilities. If it is likely that construction or maintenance activities could involve existing utilities, it is often desirable to locate and identify these facilities well in advance of the initiation of the work as an aid to both design and

construction. The location of each underground utility should be identified by the utility company with stakes, paint, or other temporary surface markings color coded by utility type. The recommended uniform color code system is as follows.

- a. Red: Electric power line or conduit.
- b. Orange: Communication line.
- b. Yellow: Gas, petroleum, steam, or other hazardous material.
- d. Green: Storm or sanitary sewers.
- e. Blue: Water system or slurry pipeline.
- f. Purple: Radioactive material.

10-3.10(02) Trenching and Backfill

The essential features for trench and backfill construction are as follows:

- 1. restoration of the structural integrity of entrenched roadbed;
- 2. security of the pipe against deformation likely to cause leakage; and
- 3. assurance against the trench becoming a drainage channel.

The integrity of the pavement structure, shoulders, and embankment are of primary concern.

Trenched construction, bedding, and backfill must be in accordance with the *INDOT Standard Specifications*. Other controls are as follows.

- 1. A trench must be cut with vertical faces, where soil and depth conditions permit, with a maximum width of outside diameter of pipe plus 24 in. It must be shored where necessary.
- 2. Bedding must be provided to a depth of 6 in. or half the diameter of the pipe, whichever is less. For ducts not encased in concrete, not less than 3 in. of bedding must be placed under the lower duct. Bedding must consist of pit-run sand and gravel mixture or other suitable material approved by the permit inspector. The bottom of the trench must be prepared to provide the pipe with uniform bedding support throughout the length of the installation.
- 3. Backfill for a trench in the roadway, or within 5 ft of pavement, paved shoulders, sidewalks, curbs, gutters, or similar structures, must consist of B borrow or other suitable material approved by the regulatory investigator and compacted in accordance with the *INDOT Standard Specifications*.

4. Backfill for a trench outside the roadway may consist of the excavated material or other suitable material as approved by the permit inspector and compacted to a density comparable to that of the surrounding soil. The top 12 in. of fill must be topsoil.

10-3.10(03) Underground Plant Protection

Each underground-utility company should subscribe to the Underground Plant Protection (UPP) Service. This ensures protection of the utility company's facilities, as it is required by law that the UPP is called at least two days prior to any excavation work. This allows the utility company to mark its underground facilities before excavation work is started.

Once a survey is completed for a proposed highway project, the surveyor should also contact UPP. While utility companies are not required by law to locate their facilities for survey work, this should still be done. If the facilities are marked for the survey, this information should be shown on the project plans. This will allow the designer to design around these facilities, if possible, and will allow the utility company to be notified in advance of an upcoming project and any potential impact to its facilities. The utility company also will have a chance to meet with the designer and discuss possible alternatives that might lessen any impact. Therefore, it is beneficial to all parties involved that each utility company subscribes to this service.

10-3.10(04) Pavement Cut

Open cutting of the pavement to install a utility facility is discouraged as it adversely affects the structural integrity of the roadway. If it is not possible to install a facility without disturbing the pavement, the utility company will be required to provide written documentation and justification for an open cut. Where a longitudinal open cut is proposed or where several cuts are proposed to cross the pavement in the same area, the district office will inspect the roadway to determine the extent of road repair that will be required.

The utility company will be required to use patch materials of at least equal quality and thickness as the originally constructed material and place it in accordance with INDOT specifications. The limits of the pavement patch must extend at least 2 ft outside the limits of the trench. The edges of the trench must be beveled at least 6 in. The limits of the patch must have vertical faces and must be sawcut for a clean break. The restored surface must be flush with and sloped at the same rate as the existing surface.

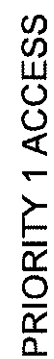
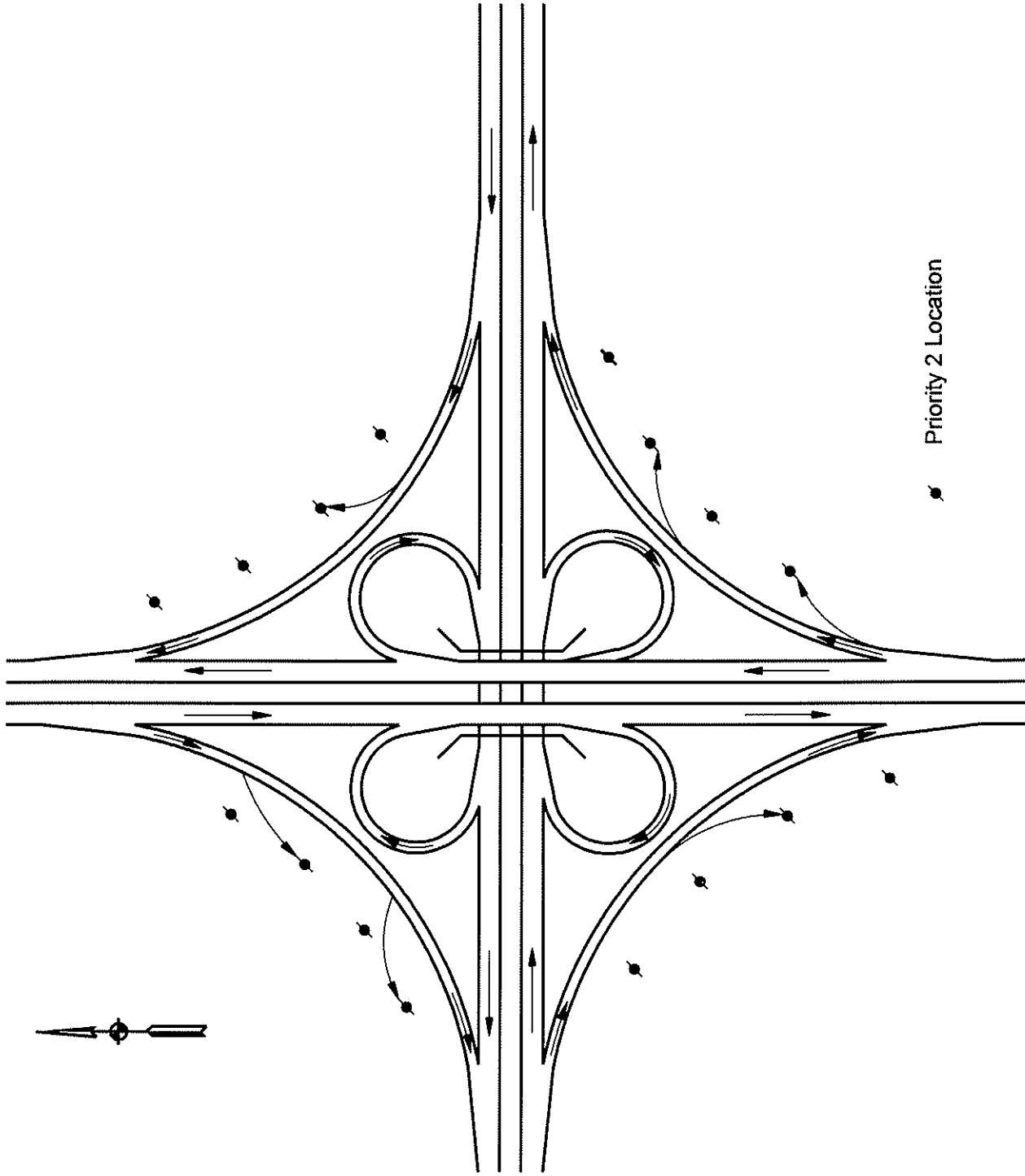
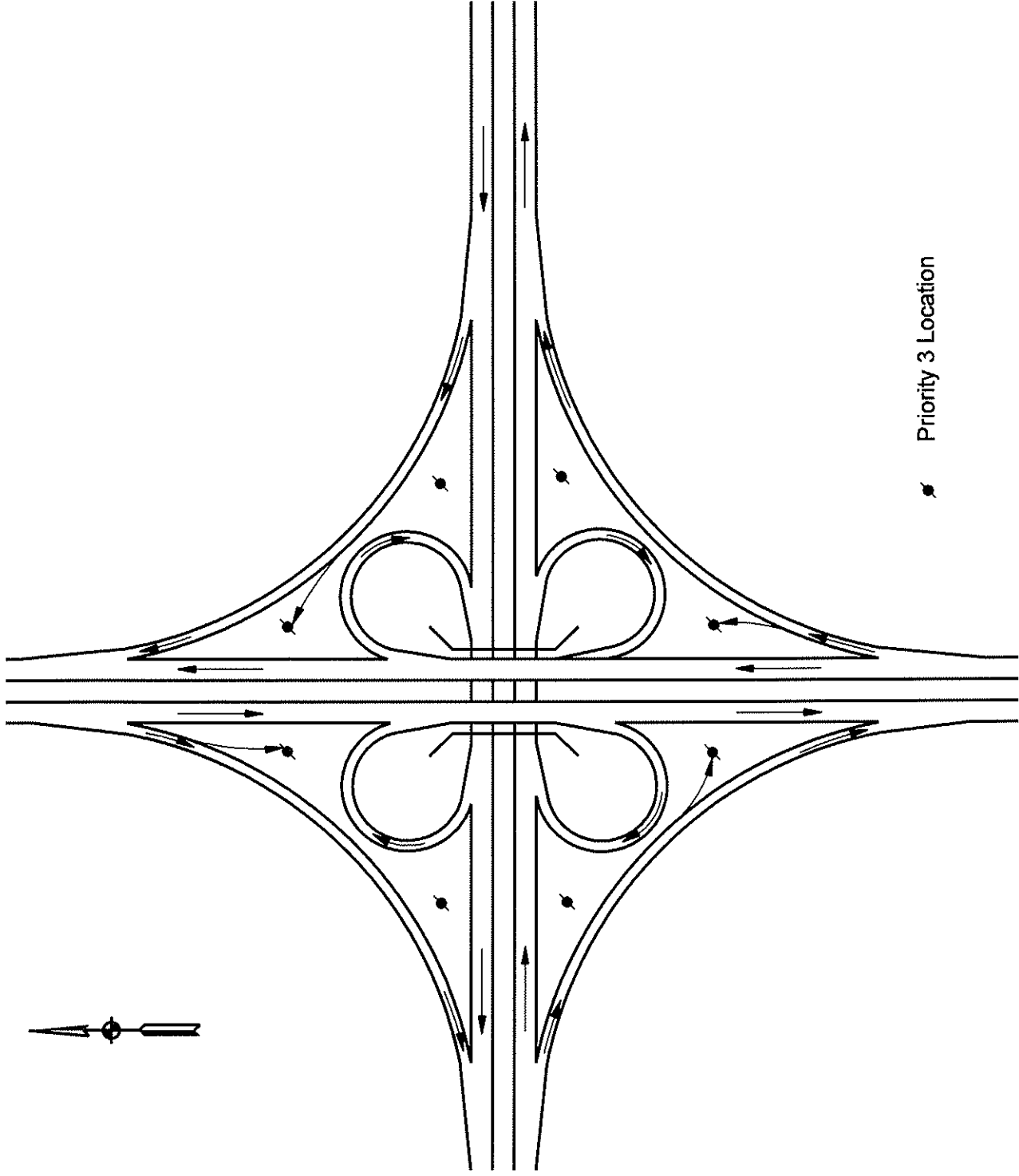


Figure 10-3A



PRIORITY 2 ACCESS

Figure 10-3B



PRIORITY 3 ACCESS

Figure 10-3 C